NASA Glenn Research Center
AEROSPACE Frontiers
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Aerospace technology garners NASA awards

Glenn news release

Six new technologies involving advanced space travel, aviation safety, and more efficient airplane engines have been selected to receive awards for innovativeness in NASA's Turning Goals Into Reality (TGIR) Awards Program. All of these technologies were led by Glenn, with participation from other NASA centers, industry, and academia.

Sponsored by NASA's Office of Aerospace Technology, the awards were presented during the 2002 TGIR Conference in Santa Clara, CA, May 21 to 23.

The following categories of awards and descriptions of work were recognized:

Advanced Space Transportation: *Shuttle RSRM Thermal Barrier Development Team.* A new braided carbon fiber thermal barrier has been developed—and is being certified for flight—that would protect critical nozzle joints and O-ring seals in the space shuttle reusable solid rocket motors. This new and important technology improves on current shuttle safety margins and enables solid rocket motor joint assembly in significantly less time as compared to the previous joint-fill compound approach and with a higher degree of reproduction.

Aviation Safety: *Aviation Weather Information and Communications Research Team.* The team developed weather presentation and communications technologies resulting in cockpit weather information systems being introduced into the marketplace. Glenn and Langley researchers worked with the Federal Aviation Administration, industry, and

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Astronauts review Glenn-developed flight hardware

BY DOREEN ZUDELL

Four astronauts from Johnson Space Center's Crew Operations visited the Center April 9 to 11 to evaluate the "human element" in the design of Glenn-developed facilities and hardware that will fly onboard the International Space Station.

Photo by Frank Gati

During the visit, astronauts Mike Fincke, Janet Kavandi, Steve Lindsey, and Heide Stefanyshyn-Piper performed a wide range of tasks on the Fluids and Combustion Facility Fluids Integrated Rack (FCF/FIR) and the Light Microscopy Module (LMM). These facilities are designed to support the study of fluid physics science in a long-duration, microgravity environment.

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Jim Kolibas, NGIT/6700 (front), demonstrates to astronaut Janet Kavandi proper mounting of the Constrained Vapor Bubble Experiment Module onto the microscope's X–Y stage using the glove ports. Edward Hovenac, NGIT/6700, looks on.

Inside

Plant response to microwave radiation

Meter measures chlorophyll concentration nondestructively.

Microwaves derived from solar power and transmitted by orbiting satellites to electric power stations on Earth might enable U.S. energy independence in the future, but is this method safe for local plant life? Scientist Jeff Skiles of Ames Research Center has designed a series of experiments in which he illuminates alfalfa plants with low-power microwaves at 2.45 GHz frequency. Skiles chose to test alfalfa because it is a crop that animals and people eat, and because it is representative of a broad class of economically important plants. The experiment involves measuring plant gas exchange and leaf chlorophyll concentrations, in addition to plant variables such as stem length and overall vigor. The results will be based on exposure during a 14-hour artificial day and constant temperatures compared to a duplicate experiment in natural sunlight and night and day temperature changes. Additional information is available at *http://amesnews.arc.nasa.gov/releases/2002/02_55AR.html*.

Icebergs may affect Antarctic life and food chain

NASA-funded research using imagery from NASA's SeaWiFS (Sea-viewing Wide Field-of-view Sensor) satellite and data from the Defense Meteorological Satellite Program shows icebergs that broke off from Antarctica's Ross Ice Shelf appear to have caused a 40-percent reduction in the size of plankton bloom (minute floating plants) in one of Antarctica's most biologically productive areas. Thorsten Markus, Goddard Space Flight Center, and his colleagues from Stanford and the American Geophysical Union believe the icebergs decrease the amount of open water that the plants need for reproduction, which is critical to the entire ecosystem that sustains marine mammals and birds in the region. Their research is part of NASA's Earth Science Enterprise, a long-term effort to better understand and protect our home planet. Images and video are available at *http://www.gsfc.nasa.gov/topstory/20020416iceberg.html*. Information on SeaWiFS can be found at *http://gsfc.nasa.gov/SEAWIFS.html*.

NASA, Southwest Research Institute search for vulcanoids

Southwest Research Institute (SwRI), in collaboration with Dryden Flight Research Center, has begun an innovative high-altitude observation program to search for a population of diminutive asteroids called "vulcanoids." The relative faintness of the vulcanoids and their pattern of orbit near the Sun restrict ground-based research, so SwRI astronomers developed a sophisticated digital imaging system, the Southwest Universal Imaging System–Airborne (SWUIS–A), which operates in the broadband visible light and near-infrared spectrums of the stratosphere. The versatile and low-cost instrument is mounted on one of Dryden's high-performance F/A–18 jet aircraft to conduct flight observation at an altitude 49,000 feet over the Mohave Desert. Knowing how many vulcanoids may exist will aid the understanding of Mercury's surface chronology and the impact history of the other planets in the inner solar system, including Earth.

Pictured right: The Southwest Universal Imaging System–Airborne used by Dryden to support flight research missions.

Video system wins award

Marshall news release

Three members of a Marshall Space Flight Center team in Huntsville, AL, received the Federal Lab Consortium's Excellence in Technology Transfer Award on May 8. They were recognized for their software technology, which has proven to be invaluable for law enforcement and other down-to-Earth applications.

The Federal Lab Consortium award is the latest in a number of awards recognizing the far-reaching capabilities of VISAR (Video Image Stabilization and Registration), a computer-based system that works by making minute details in poor-quality video, such as car license plates, readable.

The innovative system was created by Dr. David Hathaway, a solar physicist, and Paul Meyer, an atmospheric scientist, from the National Space Science and Technology Center, in partnership with Marshall, Alabama universities, and other Federal agencies. Sammy Nabors, Commercial Technology lead at Marshall, was also recognized for his work as commercialization representative for VISAR. ◆

Online tool tailors climate forecast

Goddard news release

A soon-to-be-released online tool, developed through NASA funding, will greatly aid in the management of water, fires, cattle, agriculture, energy, and more. The tool will provide easy to interpret and reliable evaluations of seasonal forecasts to predict whether temperatures and precipitation in an area will be above average or below average for an upcoming season. Currently in the latter stages of development, the site will be made public by late summer through the University of Arizona's Hydrological Data and Information System (HyDIS) website: *http://hydis.hwr.arizona.edu/*.

Headquarters' Appointments


Kostelnik


Strassmann

Administrator Sean O'Keefe recently appointed a number of people to key positions at Headquarters:

Theron M. Bradley, Jr., has been named chief engineer, responsible for the overall review and technical readiness of all NASA programs. Bradley is a former nuclear engineer for the U.S. Navy, serving in the Naval Nuclear Propulsion Program. He has also served as a civilian in leadership and management positions with the Department of Energy and the Department of Defense as well as the Office of Naval Reactors, both in the Washington and the Idaho branch.

Dr. Jeremiah F. Creedon, director of Langley Research Center, Hampton, VA, has been named associate administrator for the Office of Aerospace Technology, effective June 15. In his new position, Creedon will develop integrated, long-term, innovative Agency-level technology for aeronautics and space. He will also be charged with developing new commercial partnerships that exploit technology breakthroughs, and for establishing and maintaining technology core competencies at the NASA field centers. He replaces **Samuel L. Venneri**, who will remain at Headquarters as chief technologist, a position he has held since 1996.

Charles T. Horner, III, has been named assistant administrator for legislative affairs. Horner previously served as deputy assistant administrator. He will have an active role in helping shape the development and implementation of future policy at NASA. Horner replaces **Jeff Bingham**, who will become the senior advisor to the Administrator for policy and history.

Retired Air Force Major General **Michael C. Kostelnik** has been named deputy associate administrator for International Space Station and space shuttle, a newly created senior management position within the Office of Space Flight. The new position provides leadership and accountability for top-level safety requirements, mission success criteria, overall policy definition, and strategic planning in the direction and administration for the International Space Station and the Space Shuttle programs. Kostelnik's responsibilities will include the corporate-level management of program safety, budget, performance, and schedule requirements.

Bryan D. O'Connor, a former NASA Space Shuttle Program director, astronaut, and Marine Corps test pilot, was named associate administrator for the Office of Safety and Mission Assurance. He replaces **Frederick Gregory**, who has been leading the Office of Space Flight since December. He will be responsible for the oversight of all Agency safety issues through the development, implementation and oversight of reliability, maintainability, and quality assurance policies.

Paul A. Strassmann has been named special assistant to the Administrator for Information Management. Strassmann, who has been honored worldwide for his pioneering work in information technology (IT) development, now serves as a senior advisor to the Administrator on IT and technology structure issues.

Astronauts test the "human element"

Continued from page 1

"The purpose of the visit was to determine how well the FIR and LMM hardware could be operated in space by soliciting crew input on the design and operability of the hardware," said Frank Gati, ISS Facility Projects Branch. The 1-g evaluation was conducted in the High Bay area of

The FCF is a facility-class payload comprising two powered racks called the FIR and the Combustion Integrated Rack . The LMM, which will reside in the FIR, is an automated, remotely controllable on-orbit microscope that provides optical diagnostics compatible for fluid physics or biological experiments. The FCF is scheduled to arrive on the space station in 2005.

"The astronauts' comments were very positive while working with the hardware," Gati said. "The individual crew evaluations will be combined into a formal consensus report by the crew and sent to the Glenn/Northrop Grumman teams developing the FIR and LMM. The information contained in this report will be used by these teams to modify the FIR and LMM hardware designs, as necessary, to make them more user friendly for astronauts in space." ◆

Astronaut Heidi Stefanyshyn-Piper evaluates the ease of installation of the FIR Nd:YAG laser on the back of the FIR optics bench.

Photo by Frank Gati

Children check out Glenn

Photo by Sandra Nagy

Take Our Children to Work Day (TOCTWD) was held at the Center on April 25. Many employees, both civil servants and support service contractors, brought their children (nearly 500) to the workplace. The primary goal was to increase the children's awareness of career opportunities. Fourteen tours were given throughout the day, some of which included the 10-by 10-Foot Supersonic Wind Tunnel, Aero-Acoustic Propulsion Laboratory, ACTS Control Room, Fabrication Research Shop, Flight Simulator, GVIS Lab, and the Electric Propulsion Laboratory. Pictured are Mike Wardeiner (7180), who shares with his daughter, Rachel, the value and importance of usability testing when designing software applications. TOCTWD was sponsored by the Women's Advisory Group. For more TOCTWD photos, visit *www.grc.nasa.gov/WWW/AdvisoryGroups/WAG/*.

HBCUs/OMUs

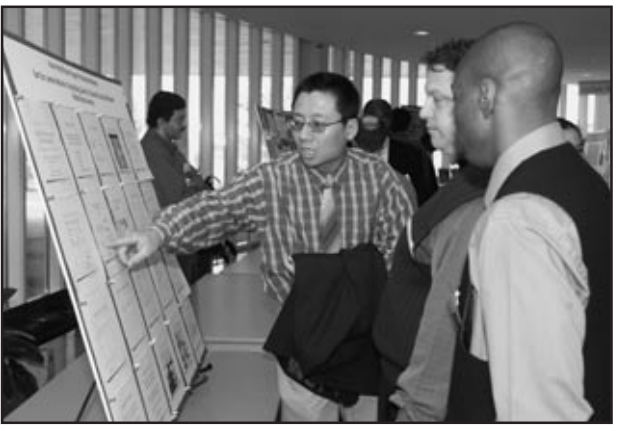


Photo by Tom Jares

More than 125 attendees helped to generate networking among Glenn scientists, engineers, managers, and students at Glenn's 8th Annual Historically Black Colleges and Universities/Other Minority Universities (HBCUs/OMUs) Research Conference held April 17 to 18 at OAI. Dr. Sunil Dutta, Glenn's Small Disadvantaged Business program manager, explained that 26 abstracts on research projects conducted at the colleges and universities in the areas of aeronautics and space propulsion, space power, fluid dynamics, design structures, and materials were presented and the progress summarized on posters displayed in the OAI lobby. Pictured, left to right, Dr. Sam Sun, Norfolk State University (NSU) principal investigator of "Novel High Efficient Organic Photovoltaic Materials" research, discusses his poster with Dr. Aloysius Hepp (5410) while James Haliburton, NSU student researcher, looks on.

DIME Drop Days

Photo by Tom Jares

Four teams comprising 15 high school students and four teacher/advisors dropped their experiments in Glenn's 2.2 Second Drop Tower facility during the Dropping In a Microgravity Environment (DIME) Drop Days activities held April 23 to 25. The experiment topics were magnetic fluids in microgravity, effects of microgravity on density-based fluid flow, change in meniscus in a microgravity environment, and flame-progression rate of burning paper. The DIME activities in the drop tower were broadcast over the Internet for the teams' home schools, family members, and other schools and organizations to observe the drop operations. While at Glenn, the teams also participated in microgravity workshops and a Center tour. Adventures In Diving, a Strongsville, OH, company, provided a SCUBA orientation that mimicked astronaut training in the Neutral Buoyancy Facility at NASA Johnson. Pictured, left to right, are Bay High School team members Hayley Baran, Stephen Dupal, Glenn mentor Dr. Gary Ruff (6711), and Brent Bauknecht. More pictures are available at *http://microgravity.grc.nasa.gov/DIME_2002.html*.

Photo by Eli Abumeri

Earth Day 2002

Twenty-one Center personnel and friends supported Glenn's exhibit for EarthFest 2002 at the Cleveland Zoo on April 21, which highlighted NASA's contributions and commitment to preserving the Earth's environment. Displays of aeronautical and space research projects such as hydrogen cell technology, life prediction software, satellite technology, an electric bike, and a host of others showed Glenn's contributions to the Nation's pursuit of clean energy alternatives and monitoring the Earth's environment. Pictured handing out a variety of posters (from the Educator Resources Center) are, left to right, Avis Hudson (0180), Sharon Houser, Quyen Quach (7521), and Bill Howser (SAIC/0540). The 2002 Earth Week Committee hosted a number of events in and outside of the Lab.

Director's Corner
With Donald Campbell

On the road to "One NASA"

Recently, I announced the establishment of NASA's new vision and mission. I also called attention to Administrator O'Keefe's message that it is only by working together across all Centers that we will be able to achieve our goals. The Integrated Financial Management Program (IFMP) is an Agencywide effort to modernize NASA's financial and administrative systems and processes. IFMP will bring us timely, consistent, and reliable information to make better management decisions. It will also help enable the "One NASA" vision of 10 interdependent and critically linked centers.

With that in mind, the IFMP system and process changes will undoubtedly change the way we work at Glenn. The real strength behind IFMP will be apparent at the program and project level. Information will be available in real time, such as funds availability, budget, and schedules. Information will be reported in a consistent and common format to encourage and support the spirit of cooperation among all programs and all centers.

Along with change comes the challenge of managing the fears and uncertainty related to new systems, new processes, and new responsibilities. We recognize that there are many significant changes accompanying this program, and that the changes may cause some concern and anxiety. We are also aware that some people will wonder if they will be prepared for the changes.

Let me assure you, we are actively planning all the necessary steps to make sure you are prepared, informed, and involved in the implementation of the IFMP at Glenn. It is important to focus on the long-term benefits we will realize through implementing IFMP. This will help us successfully transform how we do business at NASA.

News Notes

FIELD DAY: The Glenn Amateur Radio Club will participate in their 10th Annual Field Day. The 24-hour annual event provides an opportunity for "hams" to fine-tune emergency communication skills. It runs from 2 p.m., Saturday, June 22, through 2 p.m., Sunday, June 23, at the All are welcome to stop by and see various modes of amateur radio communications in operation including using voice, Morse code, radioteletype, and various types of antenna setups. For more information, contact Nancy KC4IYD at 3–5643.

PLUM BROOK REUNION: The Plum Brook Station Reunion (postponed last year due to September 11 events) has been rescheduled for Saturday, September 21, 2002, at the All current and former employees of the Station, including civil servant and support contractor personnel, are invited. A luncheon, program, and facility tours are planned. The Reunion Committee will soon send out a notice on registration details. If you did not register last year and have interest in attending this year, please notify Bill Brown at 419-433-3448 (huronbill@aol.com) or Jack Crooks at 419–433–0340 (Jackcrooks@aol.com). If you know of others who should be contacted, please provide their names and addresses as well.

LESA MEETING: LESA/IFPTE, Local 28, will hold its monthly membership meeting on Wednesday, June 12, at noon in

CORRECTION: In the Invention of the Year article, May 2002 *AeroSpace Frontiers*, branch information was transposed for two of the hollow cathode assembly award recipients. Timothy Verhey is in the Analysis and Management Branch and George Soulas is in the On-Board Propulsion Branch.

Exchange Corner

● Don't forget to purchase your Cedar Point and Six Flags Amusement Park tickets at the Exchange Store,

● Father's Day Sale is Thursday and Friday, June 13 to 14. Save 20 percent off in the Exchange Store. NASA insignia shirts and hats make great gifts!

● Help us celebrate the beginning of summer with an Ice Cream Social. You top your own dessert at the Sundae Bar for just $2 per sundae. You can also enjoy free lemonade and popcorn. The Ice Cream Social is served from 11 a.m. to 2 p.m. on Friday, June 21, in the Main Cafeteria.

● The Main Cafeteria is now open until 5:30 p.m., Mondays through Fridays, for late afternoon snacks, sandwiches, entrees, pizza, and ice cream. Also, the Deli and Catering Department can help you plan your next party. For more information, call Becky at 3–5534.

Wings of Excellence

FEB awards recognize outstanding public service

Fourteen Glenn civil servants were honored with the Federal Executive Board (FEB) Wings of Excellence Award on April 30. The award recognizes civil servants identified by their peers and supervisors as outstanding ambassadors in service to the public.

Thomas Benson, Engine Systems Technology Branch, was recognized for his inspiration and demonstration of highly innovative, interactive aeronautics educational software on the fundamentals of flight and jet propulsion designed to make the instruction and learning of science and mathematics fun and more effective for students of all ages.

James Biaglow, On-Board Propulsion Branch, was recognized for his activism to remove mental and physical barriers for employment of persons with disabilities. Biaglow served on the Congressional Task Force on Diversity, Cleveland's FEB Disability Council, and currently serves as chairperson and founding member of Glenn's Disability Awareness Advisory Group.

Denise Busch, Resources Analysis and Management Office, was recognized for her time and service as one of only two civil servant equal opportunity counselors for a staff of 1900 onsite civil servants, and for mentoring students in the NASA Plus and Young Astronauts programs at Glenn.

Beth Cooper, Engineering and Design Analysis Division, was recognized for advocacy and leadership in funding and executing, in record time, the design and construction of the acoustic anechoic chamber for the development of space station flight hardware. In addition to serving on a number of noise-conservation boards, Cooper frequently speaks on behalf of the National Hearing Conservation Association.

John DeLaat, Analysis and Management Branch, was recognized for his team building and leadership skills in support of Glenn's pioneering research in aerospace propulsion systems and in community activities such as the Respect Life group, which he founded to give financial support to expectant mothers in need and to affect public policy.

Dr. Sunil Dutta, Office of the Director, was recognized for his significant contributions in research and development of ceramics for use in advanced aerospace applications. He was also lauded for his leadership as the program manager for the Small Disadvantaged Businesses and for fostering research and educational grants to Historically Black Colleges and Universities and Other Minority Universities.

Linda Henninger, Employee and Commercial Payments Branch, was recognized for her exemplary professionalism and commitment to satisfied customers exhibited as manager of Glenn's Leave Program. Her considerate and responsive handling of calls from fellow civil servants for information or assistance reflects a caring and efficient manner.

Andrew Hubbard, Resources Analysis and Management Office, was recognized for his initiative and dedication to community outreach through the Zeta Omega Chapter of Omega Psi Phi Fraternity, Inc., mentoring program, and for his leadership in sustaining funding for the Russell T. Adrine Scholarship Foundation to aid economically challenged students to attend the Cleveland State Law School.


Benson


Biaglow


Busch


Cooper


DeLaat


Dutta


Henninger


Hubbard


Manthey


McKissock

Continued on next page

Fourteen outstanding ambassadors

Lori Manthey, Ultra-Efficient Engine Technology Office, was recognized for her success in managing the development of tools and learning modules to educate students K–12 about aeronautics and aviation and for her enthusiasm and professionalism as Glenn's representative for a number of NASA Aerospace Technology Enterprise events.

David McKissock, Analysis and Management Branch, was recognized for his contributions as treasurer of the Lewis Little Folks (LLF) child development center at Glenn, which was critical to LLF achieving accreditation, and for his enthusiastic and sustained outreach to New Life Community, an organization supporting transition housing for the homeless.

Dennis Vano, Systems Engineering Division, was recognized for his consistent, creative, and landmark activities to ensure excellent customer service including recent efforts to develop software for Web-based contract management. The software represents a substantial timesavings for both the contractor and NASA management.

Dale Van Zante, Compressor Branch, was recognized for his contributions to the field of unsteady aerodynamics and dedication to outreach activities particularly the development of a challenging program for Glenn's Explorer Scouts Aeronautics Post. The Post introduces secondary students to careers in science and engineering research in the areas of flight and propulsion while emphasizing life skills and leadership experiences.

David York, Flight Software Engineering Branch, was recognized for his work and dedication in the development and application of award-winning, embedded software that not only has met Agency customer needs, but also has become important as an enabling technology—nationally known as Embedded Web Technology—transferable to industry across the Nation.

Mary Zeller, Instrumentation and Controls Division, was recognized for her significant contributions to Glenn's mission by managing state-of-the-art technologies and supporting educational outreach in such activities as Chemistry Week for K–12 students, technical and programmatic guidance for college research, and as a thesis committee member to encourage women and minorities to participate in science and engineering.

Vano

Van Zante

York

Zeller

Graphic by Terry Condrich

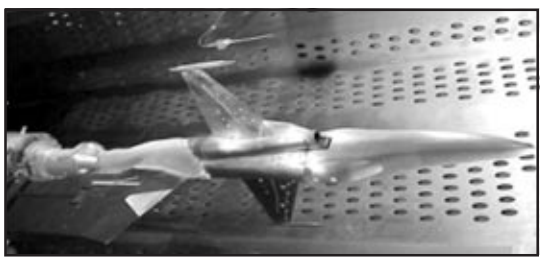
8-by 6-Foot SWT aids sonic boom research

Results of a Shaped Sonic Boom Demonstrator Test conducted in Glenn's 8- by 6-Foot Supersonic Wind Tunnel (SWT) could be a boom to the enterprise of supersonic transports. The facility enabled Northrop Grumman to collect data and validate CFD (computational fluid dynamics) prediction codes for shock patterns related to the sonic boom of the baseline and modified F–5E aircraft, a vehicle that is being used to study concepts that will allow quiet, efficient, and capable long-range supersonic flight.

Northrop Grumman is researching the F–5E as principal investigator of a study for the Quiet Supersonic Platform Program in collaboration with the United States Air Force and Defense Advanced Research Projects Agency. The program objective is to reduce or mitigate the sonic boom from commercial or military vehicles that fly in the supersonic region.

"Sonic booms are a result of the aircraft geometry (shape) and the location of features (wings, inlets, engines, etc.) generating pressure disturbances at supersonic speeds. The pressure disturbances are interpreted as noise by the human ear," explained David Stark, test lead, Wind Tunnel Test Engineering Branch. "The 8-by 6-Foot SWT test section size and Mach (speed) range enabled Northrop Grumman to employ the airframe shaping method on a scaled model of the F–5E with greater detail to compare code predictions and flight test measurements."

The Facilities and Test Engineering Division's previous experience gained from sonic boom testing in the 10-by 10-Foot SWT has allowed Glenn to develop a unique testing capability that is recognized by the U.S. sonic boom research community. This testing was sponsored by the supersonic element of the Propulsion and Power Base R&T Program. ◆



Graphics by Kelly Shankland

The 2002 Support Assistant and Clerical Awards, held on April 26, celebrated the efforts of 12 employees who are representative of Glenn's Quality Policy and commitment to excellence.

"The contributions of our support assistants and clerical personnel have been tremendous," said Acting Deputy Director Gerald Barna. "They are skilled, dedicated people who always know what's going on, how to get things done, and how to enhance the work environment."

Center Director Donald Campbell, assisted by Barna, presented certificates and awards to the following support assistants:

Myrtle Collins, office support assistant for the Office of the Director, began her career at the Center 12 years ago with Cortez III before selection as a civil servant in 1999. Collins has earned numerous letters of recommendation, group achievement awards, and performance awards including the Secretarial/Clerical Award in 1999.

Helen Kabak, executive support assistant to the Director of Engineering and Technical Services, has earned numerous performance awards during her career at the Center, including Secretarial/Clerical Awards in 1990, 1994, and 2000. Kabak serves on the *Today@Glenn* Committee, the Executive Assistants Leadership Team, and is a member of the Space Management Committee.

Diane Kovach, (not pictured) management support assistant for the Organization Development and Training Office, has held this position for the past 10 years. This year, Kovach celebrates 25 years as a civil servant, including 21 years at Glenn.

Denise Ryant, management support assistant for the Facility Management and Planning Office, has received numerous awards during her 20-year career at the Center, including the Secretarial/Clerical Award in 1990 and 1996. Ryant also supports the Senior Technical Assistant for Test Engineering and the Aeropropulsion Test Engineering Branch in the Facilities and Test Engineering Division.

Theresa Santos, Research and Technology Directorate, began her career at Glenn as a co-op student. She recently graduated from Lorain Community College with an associate's degree in Applied Business. She plans to pursue a bachelor's degree in Business at Cleveland State University in the fall.

Chris Titran, executive support assistant to the Chief, Commercial Technology Office, has received numerous performance awards during her 36-year career at the Center, including a 1989 Secretarial/Clerical Award. Titran also supports VIP events coordinated through the Office of the Director, External Programs Directorate, and others by request.

InDyne, Inc., (IDI), Program Manager James Gallagher, joined by Administrative Services Supervisor Susan Silver, presented certificates and awards to the following members of IDI's clerical staff:

Charlotte Kwiat, (not pictured) IDI/Structural Analysis Branch in the Engineering Design and Analysis Division, has earned numerous performance awards during her 13-year career at the Center, including a 1998 Secretarial/Clerical Award.

Continued on next page


Collins


Kabak


Ryant


Santos


Titran


Prestien

Twelve recognized for quality and commitment

Rebecca Kwiat, (not pictured) IDI/Mechanical Components Branch in the Structures and Acoustics Division, is a graduate of Baldwin-Wallace College, and has been a Center employee for 4 years.

Ruth McClure, (not pictured) IDI/Structural Systems Dynamics Branch in the Engineering Design and Analysis Division, has earned numerous performance awards during her 15-year career at the Center, including a 1999 Secretarial/Clerical Award.

Paula Pal, (not pictured) IDI/Thermal/Fluid Systems Design and Analysis Branch in the Engineering Design and Analysis Division, has received numerous special achievement awards during her 6-year career at the Center. Pal also serves as the Area 2 Safety Committee secretary.

Denise Prestien, IDI/Materials Division, is an Executive Secretary graduate from Zorn Business School in Houston, TX. During her 13-year career at the Center, Prestien has earned a Performance Plus Award (1996), several team awards, and the Secretarial/Clerical Award in 1995, 1997, and 1999.

Judy Rion, (not pictured) IDI/Combustion Science Branch in the Microgravity Science Division, has been employed at the Center for 4 years. Rion also supports the Division Senior Researcher and the Combustion Discipline Program Manager. ◆

Glenn receives six prestigious TGIR awards

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academia to achieve better crew situational awareness. It is anticipated that these systems will result in a 50-percent reduction in aircraft accidents attributable to a lack of weather situational awareness.

Emissions Reduction: *Turbomachinery Disk Alloy Development Team.* Materials researchers at Glenn in collaboration with industry developed a new disk alloy for commercial and military engines. This nickel-based powder metallurgy superalloy can withstand much higher temperatures than disks currently in operation. With this increased durability at high temperatures, engines can then function at higher pressure ratios, translating into increased fuel efficiency, lower fuel burn, and reduced aircraft emissions.

Noise Reduction: *Engine Noise Reduction Flight Research Team.* In a collaborative effort among Glenn and Langley researchers and various industry partners, a scarfed inlet, a variable-area exhaust nozzle, and several different chevron nozzle concepts were successfully flight-tested on Honeywell's Falcon 20 testbed aircraft and on NASA's Lear Jet. These technologies are being rapidly incorporated into commercial aircraft engines. The GE CF34–8 engine, soon to be certified by the FAA, will be the first engine to include nozzle chevrons and will be used on regional jets. These new technologies are needed to ensure that aircraft meet stringent noise requirements.

Pictured, right: William Karpinski, QSS/5120, makes final preparations for a creep test to evaluate a new disk alloy material for improving future aircraft engines.

Photo by Marvin Smith

Mobility: *Oil-Free Turbomachinery Team.* Researchers at Glenn successfully rig-tested oil-free air bearings through the range of high-speed, sustained-load, and elevated-temperature conditions typically seen in the core of a gas turbine engine. A NASA-patented coating technology allowed the bearings to operate at temperatures higher than oil lubricants can typically withstand. This test of prototype radial foil air bearings is leading the way to an oil-free version of the Williams International E–22 turbine engine.

Mission Reach: *Iridium-Coated Rhenium Rocket Chamber Material Development Team.* Glenn researchers developed and matured an iridium-coated rhenium system for radiation-cooled rockets, which is the first major advance in onboard chemical propulsion for satellites in 30 years. The new iridium-coated rhenium chambers operate at 2200 degrees centigrade, increasing the operating temperature by 900 degrees over state-of-the-art chamber materials. This increase allows a significant reduction of fuel film cooling in bipropellant engines, with a corresponding increase in combustion efficiency. ◆

For a more detailed explanation of the winning technology, see the online press release at http://www.grc.nasa.gov/WWW/PAO/html/newsroom/htm.

People


Dr. DellaCorte


Dr. Fleming


Kotlenz


Solomon


Truscot


Dr. Valco

The Society of Tribologists and Lubrication Engineers (STLE) has selected "Load Capacity Estimation of Foil Air Journal Bearings for Oil-Free Turbomachinery Applications" by **Dr. Christopher DellaCorte** and **Dr. Mark Valco** (0300), Structures and Acoustics Division, to receive the STLE Captain Aldred E. Hunt Memorial Award for best paper of 2002. The paper combines Glenn's generated data with an extensive literature search to develop a model to estimate foil air bearing load capacity as a function of bearing geometry, operating condition, and style. The model has been used successfully by turbomachinery companies in establishing feasibility of oil-free turbomachinery applications and has been well received by foil bearing designers.

Dr. David Fleming, Mechanical Components Branch, received the International Symposium on Transport Phenomena and Dynamics of Rotating Machinery (ISROMAC) award from The Pacific Center of Thermal-Fluids Engineering in recognition of his outstanding research contributions in the area of dynamics of rotating machinery. The award was presented at the ISROMAC–9. Fleming presented a paper "Effect of Bearing Dynamic Stiffness on Gear Vibration" at the symposium. This paper shows that, with the proper choice of bearing stiffness and damping, transmission error in a drive system can be reduced up to 16 decibels. Transmission error is a commonly used indicator of the noise produced by a geared transmission, and is of vital interest to manufacturers and users of helicopters.

The Ohio Chapter of the High Technology Crime Investigation Association recently awarded Information Technology Security Manager **Pamela Kotlenz** with a plaque recognizing her generous and long-standing support of the law enforcement community. The award stated that "Pamela contributed materially to the success of law enforcement's investigation of computer crimes. Her willingness to share her substantial knowledge and expertise and to make other NASA resources available to law enforcement have been instrumental in the successful prosecution of numerous criminal cases." Kotlenz participated in the recent Glenn-hosted law enforcement forensics training course entitled "SMART for Linux and BEOS." Federal, state, and local enforcement officers from across the United States attended. Andrew Rosen, author of numerous books on forensics, conducted the hands-on training.

Robert Solomon, Computer Services Division, was elected to the Board of Directors of the Federal Information Systems Security Educators Association (FISSEA). Sponsored by the National Institute of Standards and Technology, FISSEA promotes collaboration and sharing of products and practices for the development and delivery of computer security training to government agencies and their partners. Solomon is part of Glenn's Expert Center for Information Technology (IT) Security Awareness and Training. The Expert Center, recognized as a model in the area of computer security training, provides guidance and coordination of the IT security training for the Agency.

Floyd Truskot, Space Electronic Test Engineering Branch, has received the National Business & Disability Council's 2001 Silver Employee of the Year Award of Honor. The award is given to an employee with a disability who is engaged in competitive employment. The Council's philosophy is that a qualified person with a disability can perform productively if given an equal opportunity to compete. The person nominated must exemplify this philosophy and be a positive influence on other staff members. Awards of Honor are one of the highlights of the annual conference, which was held at Walt Disney World Resort, Lake Buena Vista, FL, on April 25. These prestigious awards recognize corporations and individuals that promote opportunities for persons with disabilities as employees and consumers.

In Appreciation

Thanks to all my GRC colleagues for your cards, gifts, and especially your prayers during my recent surgery and recovery. Your kindness and thoughtfulness were greatly appreciated.

—Loretta Shaw

Your thoughts, prayers, and expressions of sympathy upon the sudden death of my younger brother are truly appreciated.

— Susan Gott

DEADLINES: News items and brief announcements for publication in the July issue must be received by noon, Friday, June 14. The deadline for the August issue is noon, Friday, July 12. Submit contributions to the editor via E-mail at doreen.zudell@grc.nasa.gov, fax 216–433–8143, phone 216–433–5317 or 216–433–2888, or Ideas for news stories are welcome but will be published as space allows.

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AeroSpace Frontiers is an official publication of Glenn Research Center, National Aeronautics and Space Administration. It is published the first Friday of each month by the Community and Media Relations Office in the interest of the Glenn workforce, retirees, government officials, business leaders, and the general public. Its circulation is approximately 6700.

Behind the Badge...

a closer look at our colleagues

Robert Laws

Job Assignment: I'm employed by Singleton Health Services, LLC, and serve as a fitness specialist at the Fitness Center. Some of my class participants and trainees affectionately call me "Hurt-Me Bob."
Time at Glenn: I've been at Glenn for 2.5 years.
Hometown: I grew up in Lyndhurst.
Describe your family: My wife, Lynn, and I are expecting our first child in June.
Career alternative: I would work as a teacher-coach, helping kids learn and appreciate physical fitness.
Favorite food: I must admit to an ice cream addiction—chocolate being a close second.
Favorite web site: I'm a bit of a news or current events junkie, so I tend to gravitate towards news sites such as cnn.com or foxnews.com.
Favorite music: I'm pretty eclectic in my musical preferences, ranging from country to hard rock. It really depends on what mood I'm in at the time.
Favorite book or magazine: I love to read. I usually lean toward thrillers by Clancy, Ludlum, and Koontz, and mysteries by various authors.
Activities when away from Glenn: I enjoy a lot of outdoor activities such as hiking, golf, gardening, and running. I participate in local races nearly every weekend. I lose a lot but I have fun!

Ellis Sims

Job Assignment: Systems Technician with Affiliated Computer Services, Telecommunications and Networking Branch.
Time at Glenn: I've been here 4 years.
Hometown: I was raised in Erie, PA.
Describe your family: God has blessed me with a wonderful family. I am married to a very special lady named Xynique Sims, a member of Glenn's Office of Human Resources, whom I love very much. We have three children—my daughter, Rubye Ellise, 11, who lives in Erie; my stepson, Anthony, 16; and our precious 2-month-old daughter, Xaria Elai.
Favorite food: Chicken and soul food.
Favorite music: Gospel
Favorite book or magazine: The *Bible*
Favorite movie or play: I like a good action movie, but I love any movie featuring Robert DeNiro, Al Pacino, Mel Gibson, Samuel L. Jackson, or Bruce Willis.
Activities when away from Glenn: I love to spend time with my family. I also love to sing for the Lord. I sing with a gospel group here in Cleveland called The Christian Brothers. We do a lot of traveling to different cities around the country. I also sing with the Praise and Worship Team at my church, The House of Glory.

Retirements

Caswell

Czupkowski

DeRaimo

Kremser

Pamelia Caswell, Community and Media Relations Office, retired on April 3, 2002, with 36 years of NASA service.

J. Mark Czupkowski, Facilities and Test Engineering Division, retired on April 3, 2002, with 22 years of NASA service.

James DeRaimo, Facilities and Test Engineering Division, retired on April 3, 2002, with 40 years of NASA service.

Edward Kremser, Facilities and Test Engineering Division, retired on April 3, 2002, with 40 years of NASA service.

James Liebel (not pictured), Facilities and Test Engineering Division, retired on April 3, 2002, with 36 years of NASA service.

New Dry Room will aid aerospace research

BY DOREEN B. ZUDELL

Glenn's Facilities and Test Engineering Division (FTED) recently completed construction of a metal building to house a Dry Room Facility.

Located on the west side of the Space Power Research Laboratory,

the Dry Room Facility is intended to maintain 1 percent relative humidity, which is imperative to conducting experiments requiring moisture-sensitive materials that are highly flammable.

Michelle Manzo, lead researcher in the Electrochemistry Branch, said the Dry Room is a valuable addition to Glenn's research facilities. "Our primary research goal is to develop a polymer electrolyte battery for aerospace applications," she explained. "With the aid of this facility, we hope to produce batteries that are 3 to 4 times more lightweight and energy-efficient than current state-of-the-art batteries."

Renee Palyo, project manager, FTED, said several special features were re-quired in the facility design such as composite walls made with a foam core and aluminum panels and a dehumidification system that utilizes a desiccant wheel to remove humidity.

The location of the site posed several challenges as well. "In order to install the foundation, we relocated existing underground utilities such as gas, water, and sewer. This required a significant effort to coordinate the utility shutdowns with a minimum impact to the building occupants," explained Palyo. "Also, since the site is in close proximity to wooded areas and the Abram Creek Valley, minimizing impact to trees, as well as site access, had to be considered in every phase of the project."

Christopher Williams, construction manager, OWM/FTED, said that due to the critical research needs, the construction process was fast-tracked. "The pace of the project schedule was such that any issues that occurred during construction had a direct impact on the completion date," he explained. "The project team members displayed an extraordinary effort in completing this project."

Photo by Christopher Williams

A view inside the new Dry Room, located by

FTED project members included Project Manager and Civil Engineer Renee Palyo, Construction Manager Christopher Williams (OWM), Construction Quality Assurance Technician Bill Spilker, Mechanical Engineer Jerry Konyk (ANLX), Electrical Engineer Vince Conrad, Architect Tom Hinshaw, Structural Engineer Bob Houk, Fire Alarms and Controls Paul Starner, Mechanical Systems Engineer Larry Schroeder, Energy Systems Manager Quyen Quach, and Acting Low Voltage Systems Manager Laszlo Zala. Safety Office members included Dallas Jenkins and Frank DeAngelo, and Angela Windau, Environmental Management Office.

Portions of this article were contributed by Julie Barker, IDI/FTED.

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